

MYOCARDIAL INFARCTION DUE TO GIANT CELL ARTERITIS: A CASE REPORT AND LITERATURE REVIEW

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Giant cell arteritis occurs mainly in the cranial arteries, especially in the temporal area, and rarely in the coronary arteries. Here, we present a case of coronary artery giant cell arteritis in a 51-year-old woman who complained of atypical chest pain. Radionuclide angiography showed dilated left ventricle with global hypokinesia. Despite medical treatment, she suffered progressive heart failure and finally was given a heart transplant. The pathologic examination revealed myocardial infarction due to coronary giant cell arteritis. Unusual giant cell arteritis should be considered in the differential diagnoses of myocardial infarction.

Key Words: coronary vascular disease, giant cell arteritis, myocardial infarction
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Giant cell arteritis usually presents as a systemic vasculitis in aged subjects and occurs mainly in cranial arteries, especially the temporal artery. For this reason, giant cell arteritis is sometimes called temporal arteritis. It is also known as granulomatous arteritis—a reference to a particular type of inflammation. Giant cell arteritis frequently causes headache, jaw pain and blurred or double vision, but the most serious potential complications are blindness and, less often, stroke.

CASE PRESENTATION

A 51-year-old woman complained of atypical chest pain, progressive dyspnea in the past 3 years, bilateral lower leg edema and intolerance of daily activity.

Her symptoms were improved by diuretics usage. The biochemical data were unremarkable. Electrocardiography revealed an old anteroseptal myocardial infarction and complete right bundle branch block. Radionuclide angiography disclosed dilated left ventricle with global hypokinesia. The ejection fraction of left and right ventricles was 11% and 23%, respectively. Coronary angiography showed that the coronary arteries and all their branches were patent, and dilated cardiomyopathy was impressed. Also, a temporary pacemaker was inserted for bradycardia due to complete atrioventricular (AV) block. She was put on a waiting list for heart transplantation owing to her repeated episodes of congestive heart failure. Aggressive diuresis and inotropic support were maintained before heart transplantation. She underwent orthotopic heart transplantation in December 2003. The native heart weighed 310 g. Grossly, bilateral ventricular dilatation with mild hypertrophy of the right ventricular wall (left, 1.0 cm; right, 0.4 cm) was discernible. A characteristic well-demarcated infarct area was present in the interventricular septal area. Microscopically, granulomatous vasculitis with multinucleated

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giant cell formation was found in the septal branch of the coronary artery (Figure) as well as the adjacent myocardium, mimicking the microscopic appearance of giant cell myocarditis. Acid-fast stain for this vasculitis was negative. Only mild atherosclerotic change was observed in the coronary artery branches (10% in left anterior descending and 5–10% in right coronary artery). The myocardium elsewhere showed no evidence of myocardial infarction. So the final pathologic diagnosis was giant cell arteritis (with segmental involvement of the septal branch of the coronary artery) rather than dilated cardiomyopathy. Immunosuppressive drug, cyclosporine, was given to control rejection in the post-transplantation stage. Almost no cellular rejection was found in serial post-transplantation endomyocardial biopsies. Also, no such inflammatory change occurred in vessels elsewhere especially in the head and neck area. The patient's post-transplantation recovery was uneventful, even up to today.

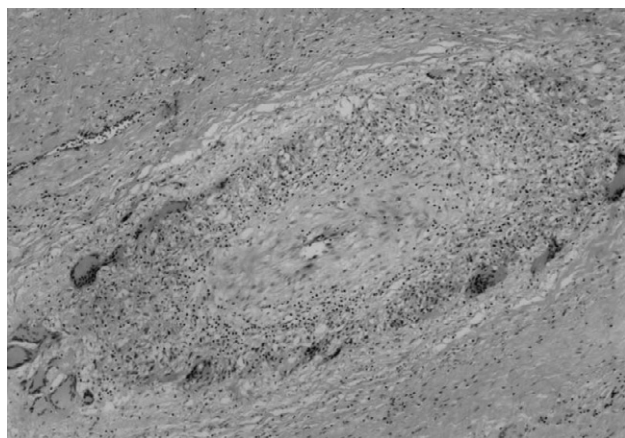


Figure. The septal branch of the coronary artery shows granulomatous vasculitis with multinucleated giant cell formation (hematoxylin and eosin, 40 \times).

DISCUSSION

Giant cell arteritis is a systemic vasculitis of aged subjects that occurs mainly in the cranial arteries (especially the temporal artery) [1] and occasionally in visceral and peripheral arteries [2]. Cases of giant cell arteritis in isolated coronary arteries, resulting in myocardial infarction, are unusual and have been infrequently reported in the literature (Table) [3–5].

In most of these reports, the definite diagnosis was based on postmortem examination or on atherectomy specimen evaluation [3–5]. In our case, the histopathologic diagnosis was based on evaluation of the native heart after heart transplantation. This is the first such case mentioned in the heart transplant literature in which native heart evaluation was used to confirm this diagnosis.

The differential diagnoses include infectious arteritis and immune-mediated vasculitis. Absence of evidence of viral, syphilitic, tuberculosis or fungal infection after routine and special histopathologic examination excluded the former possibility, while absence of autoimmune antibodies, such as antinuclear antibody, rheumatic factor or antineutrophil cytoplasmic antibody excluded the latter possibility. The differential diagnoses also include Takayasu's arteritis and giant cell arteritis. Takayasu's arteritis was excluded because it occurs mainly in young women and may affect the aorta and its main branches [6]. Therefore, the diagnosis of giant cell arteritis was favored in this case.

Coronary angiography and pathologic examination confirmed that the main coronary arteries were not occluded. The vasculitis was present predominantly in the intramural branches of the coronary artery. The result of myocardial fibrosis (recent and remote) is marked and well defined in the territory of the supplying coronary artery. Vasculitis of small or

Table. Summary of reported cases of isolated coronary involvement of giant cell arteritis

Study	Patient age (yr)/gender	Clinical impression	Histologic examination	Status of main coronary arteries	Outcome
Saito et al [3]	27/M	Myocardial infarction	Coronary atherectomized tissue	Total occlusion of LAD	Recovery
Cohle et al [4]	19/F	Sudden cardiac death	Autopsy	Thrombosis of the left main coronary artery	Fatal
Kumar et al [5]	74/F	Marked LV dysfunction	Autopsy		Fatal

LAD = left anterior descending artery; LV = left ventricle.

medium-sized vessels has been associated with coronary vasospasm and arrhythmias [7] leading to myocardial infarction and congestive heart failure. In this case, renal and pulmonary functions were within normal limits. Dilated cardiomyopathy probably partially resulted from complete AV block. The relation between complete AV block and giant cell arteritis was not known. In this case, thallium scan was not performed.

The patient received heart transplantation to treat New York Heart Association class IV symptoms. The patient's postoperative course was uneventful during a 2-year follow-up period. No headache, anorexia or recurrent symptoms were seen. The prognosis differs from that in cases of temporal arteritis with coronary artery involvement. Giant cell arteritis confined to the coronary artery is almost always fatal [5,8]. Because experience on the effect of heart transplantation is limited, further investigation and long-term follow-up of this kind of patient, treated with heart transplantation, are necessary. This case suggests that coronary artery giant cell arteritis should be added to the list of differential diagnoses for patients suspected of myocardial infarction due to coronary artery disease or dilated cardiomyopathy.

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源自巨細胞動脈炎的心肌梗塞 — 病例報告及文獻回顧

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大部分的巨細胞動脈炎都是發生在頭頸部的動脈，尤其是顱動脈。發生在冠狀動脈的巨細胞動脈炎，並且造成心肌梗塞的病例實在是很罕見。我們這裡報告一個 51 歲的女性主訴非典型的胸痛，而所給予的檢查均呈擴張性心肌症。雖然經過內科的處理但仍逐漸呈現心臟衰竭，最後給予了心臟移植，病理檢查才發現是局部性冠狀動脈的巨細胞動脈炎。這給我們一個啟示，一般心肌梗塞的病例需將此一罕見的巨細胞動脈炎列入鑑別診斷，因其常有全身表現。同時我們也回顧了文獻上相同的病例做比較。

關鍵詞：冠狀動脈疾病，巨細胞動脈炎，心肌梗塞
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